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## The effect of cloud computing technology in personalization and education improvements and its challenges

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### Abstract

With emergence of electronic systems and removal of paper, virtual technologies and electronics are becoming important. This paper discusses the importance of electronic training and emphasizes on its qualitative and quantitative development for some organizations or technical science and engineering students. The main focus of paper is on utilizing grounds of training based on usual network infrastructures such as internet or advanced distributed systems such as cloud computing environments. Finally, in new environments such as cloud computing, service composition and presenting virtual machine based on student's requirements and abilities significantly is more important that we address some problems in this issues.

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### 1. Introduction

The emergence of computer has transformed business dramatically. The significant characteristic of this era is information explosion that has happened due to dramatic technology growth. The amazing speed of information technology growth has created a scheme that organizations should have required capabilities to encounter it so that keep on in the route of growth and development. This situation has some requisites that we should possess them. We should act in a manner that could have a dynamic organization in the world competitions and use properly the capabilities that are in this world. One of these capabilities is virtual education and localizing it in organization. Virtual education (VE) means utilizing electronic systems such as computer, internet, multimedia disks, electronic books, journals and virtual newsletters, etc (Kurbel, 2001). The aim of VE is to reduce comings and goings and to save time and cost and to learn easily for trainers and learners/ students.

Throughout 2009 cloud computing has continued to catch eyes and efforts both in industry and academic organizations. Cloud solutions seemed to state master keys for the IT enterprises who suffer for budget concerns and economic woes (Teng and Magoules, 2010). Cloud computing, a new paradigm of distributed computing, presents many new ideas, concepts, principals, technologies and architectural styles into service-oriented computing . I. Foster, defines the ambiguous cloud as “A large-scale of distributed computing paradigm that is driven by

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economies of scale, in which a pool of abstracted virtualized, dynamically-scalable, managed computing power, storage, platforms, and services are delivered on demand to external customers over the Internet” (Foster *et al.*, 2008).

In fact, the basic infrastructure of our virtual education and virtualization system is cloud computing environment. Because with a complete and real virtualization that is possible in this environment (Longji *et al.*, 2010), we can offer a good training and students don't need to be online in a common or specific time. According to previous studies, the organizations and firms that have used this kind of facilities which offered in the form of virtual services or machines, have had improvements in fields like improvement of learning and training quality and effectiveness and reduction of training costs. Cloud computing infrastructures accelerated the adoption of different technological innovations in academia and its facilities and resources could be accessed by the colleges as on-demand (Ercan, 2010). Praveena & Betsy provided a comprehensive introduction to the application of cloud in universities (Praveena and Betsy, 2009). As the statistics show, approximately 40% of costs in this kind of firms have been reduced without effectiveness reduction. In efficiency increase dimension, it has been proved that electronic training has reduced the learning time from 25% up to 50% and the active time of information maintenance has increased significantly. Also, by creating and choosing a good ground for electronic training, we can create a work environment with trained staff in a short time that will lead to more productivity in organization and training.

## 2. The necessity of move toward e-learning and virtual education

With spread of information technology and telecommunication instruments, the methods and means of training also have transformed. Electronic and virtual training have widespread in society and training classes are held electronically and without need to attendance of students. Universities can save money and reduce the number of scientific board members and staffs by improving conditions and by familiarizing students and staff with method of electronic training. By implementing training programs electronically, not only the quality of training and supervision doesn't reduce, instead, due to wide executive capabilities of these systems, all training process from planning and determining the requisites to implementation and supervision and assessment and consequently issuing related certificates can be done properly. This can lead to saving annual expenditures of education. Virtual training has reduced the learning time from 25% to 50% and has shown that active time of information maintenance also has increased significantly. IBM Company, in a survey that had done from participants in virtual courses has reported that learners could learn in less time in comparison to traditional courses (Education, 2007). Sun Microsystems company, by improving conditions and implementing the program of familiarizing staff with method of utilizing virtual training could save 100 million dollars in salary of employers (in comparison to real time needed for assigning sale responsibility). So, regarding these discussions, we can understand the need for using virtual training in education (Microsystems, 2009). Of course virtual training needs technology and appropriate ground. Many appropriate and useful grounds have been established on the basis of internet or intranet, but we sometimes witness limitations in access, privacy and expressing needs. However, in recent years, one of the grounds that could adapt flexibly and dynamically with requirements of any organization is using cloud computing environments. The reasons of popularity of these environments are offering services with high quality and low cost in the first stage and using modern or virtualized facilities in the second stage. Microsoft believes that with cloud computing in education, users get powerful software and massive computing resources where and when they need them. Use cloud services to best combine: (1) On-demand computing and storage, (2) A familiar development experience with on-demand scalability; and (3) Online services for anywhere, anytime access to powerful web-based tools (Microsoft, 2011).

Some of well-known and active internet companies such as google predicted that 90% of present systems will be replaced by cloud computing systems in the coming years (Google, 2012). Eventually, cloud computing will develop and will change to a set of integrated services. And also by establishing private and public cloud computing, these systems will transform to business, education and update and online service offering environments.

### 3. Cloud computing and offering education services to engineering students

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Virtual reality is a medium between human and computer that simulates real environments and enables user to encounter with it. Such a system is like studying three dimensional images on two dimensional monitor and is similar to watching sea through glass bottom of a boat. With increase of the number of internet sites, competition for absorbing users has increased too. In this competition, those sites will be successful that have more interaction with users in addition to beautiful appearance. The investigation of 100 top sites has showed that majority of them use two and three dimensional animation and propaganda.

In developed and internet-based environments using virtual reality in wider extent, membership and use of services will be wider. For instance, in cloud computing environment, you will be able to use various services. These services include education services, offering software and other standard resources, and creating services or desired virtual machines to meet our needs. Advantages of using virtual environments

- In this environment, user feels more secure.
- In most cases, the cost of design and implementation is less.
- It is flexible and we can change it easily and according to conditions and goals.
- It has real users and significant potentiality so that users can experience a model similar to life or walk in a secure environment and at the same time can control that environment. It may be impossible in reality.

For example, when students need to do complex calculations on a powerful system and with desired specifications, this possibility isn't provided for them or they should do the operation in weaker environments. But by using cloud computing in offering special services for students of technical science, the student can create this system by requesting a virtual machine with desired specifications as well as needed software and can use it in his related projects and destroy it at the end of project (resource release).

One of the challenges of technical science students is simulating and creating three dimensional models from the results of implementing researches and projects. For instance, we can refer to applying various algorithms for three dimensional simulations in the field of mechanical engineering (machine and building design, bridge installation and measuring their resistance) or in the field of computer such as simulation in complex calculations in distributed environments such as grid computing, etc. For modeling, we usually need one or more powerful computer. It is difficult to provide them in reality, but we can define them virtually in cloud. It then saves data about virtual world and directs applied software to control what is happening in virtual world. It also gets information from outside or other information systems to produce and present desired models. Simply, virtual reality in engineering in fact is observing data and processing information to reach to two or three dimensionally imagined patterns or models and in some cases establishing interaction with simulated three dimensional environments.

### 4. Conclusion

To internalize electronic training in universities and organizations and to use its advantages in performance and efficiency increase, we should consider its principles. Carefully choosing prepared products in the form of virtual machines on cloud or customized grounds which is in accordance with student's need and their professional growth, is better than buying powerful computer systems and their related software. Private use of computer systems in organizations has decreased the interaction with outside and has slowed down the progress in learning and research. So, in order that universities and other organizations use the advantages of modern educations and other electronic services, various parameters such as cost and speed of learning and progress should be considered.

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